

CLAIMS

What is claimed is:

1 1. A method for controlling a production operation, comprising:
2 electronically reading printed information from at least one component tape at
3 intervals along the at least one component tape, wherein the printed information includes a
4 count of at least one electronic component, the count indicating a position of the at least
5 one electronic component on the component tape; and
6 automatically controlling at least one production device using the printed
7 information.

1 2. The method of claim 1, wherein automatically controlling at least one production
2 device comprises:
3 verifying components of at least one production position using the printed
4 information;
5 verifying a production set-up using the printed information; and
6 inhibiting production upon detection of an incorrect production set-up;

1 3. The method of claim 2, further comprising verifying equivalent components of the
2 at least one production position using the printed information.

1 4. The method of claim 2, further comprising verifying that at least one rule is
2 satisfied using the printed information.

1 5. The method of claim 1, further comprising:
2 providing at least one advance notice of when material will be exhausted for the at
3 least one production position;

4 tracking an inventory of the at least one electronic component using the printed
5 information;
6 controlling the inventory using the printed information; and
7 generating production records using the printed information.

1 6. The method of claim 1, further comprising transferring the electronically read
2 printed information using a Radio Frequency Data Communications (RFDC) system.

1 7. The method of claim 1, further comprising:
2 electronically reading printed feeder information off of at least one feeder;
3 electronically identifying the at least one feeder; and
4 determining that the at least one feeder is fit for operation using information of at
5 least one feeder database.

1 8. The method of claim 1, wherein the printed information further comprises at least
2 one item selected from a group comprising part number, tolerance and value description,
3 batch number, lot number, component manufacturer, and component vendor, and wherein
4 the printing comprises at least one type selected from a group comprising alphanumeric
5 characters and Automatic Identification and Data Capture (AIDC) technologies, and
6 wherein the printing is produced using at least one method selected from a group
7 comprising printing, ink jet printing, laser etching, and imaging.

1 9. The method of claim 1, wherein the AIDC technologies comprise one-dimensional
2 barcodes, two-dimensional barcodes, three-dimensional barcodes, composite symbology,
3 and Reduced Space Symbology barcodes.

1 10. The method of claim 1, wherein the electronic reading comprises scanning and
2 reading using at least one technology selected from a group comprising Optical Character
3 Recognition (OCR), Optical Mark Recognition (OMR), Magnetic Ink Character
4 Recognition (MICR), infrared scanning, and machine vision, wherein the machine vision
5 technology uses at least one vision subsystem selected from a group comprising linear
6 imagers, laser imagers, and charge coupled device (CCD) cameras.

1 11. The method of claim 1, wherein electronically reading printed information
2 comprises scanning and reading printed information on at least one cover tape of the at
3 least one component tape.

1 12. The method of claim 1, wherein electronically reading printed information
2 comprises scanning and reading printed information on at least one carrier tape of the at
3 least one component tape.

1 13. A system for controlling a production operation, the system comprising at least one
2 processor coupled to at least one memory device and at least one production device, the
3 system capable of monitoring and controlling the production operation by:

4 electronically reading printed information from at least one component tape at
5 intervals along the at least one component tape, wherein the printed information includes a
6 count of at least one electronic component, the count indicating a position of the at least
7 one electronic component on the component tape; and

8 automatically controlling at least one production device using the printed
9 information.

1 14. The system of claim 13, wherein the system is further capable of monitoring and
2 controlling the production operation by transferring the electronically read printed
3 information using a Radio Frequency Data Communications (RFDC) system.

1 15. The system of claim 13, further comprising at least one component database,
2 wherein automatically controlling at least one production device comprises:
3 verifying components of at least one production position using the printed
4 information and information from the at least one component database;
5 verifying a production set-up using the printed information; and
6 inhibiting production upon detection of an incorrect production set-up.

1 16. The system of claim 15, further comprising at least one alternative component
2 database, wherein automatically controlling includes verifying equivalent components of
3 the at least one production position using the printed information and information from the
4 at least one alternative component database.

1 17. The system of claim 15, further comprising at least one rule database, wherein
2 automatically controlling includes verifying that at least one rule is satisfied using the
3 printed information.

1 18. The system of claim 15, further comprising at least one feeder database, wherein
2 automatically controlling includes electronically identifying at least one feeder and
3 determining that the at least one feeder is fit for operation using the at least one feeder
4 database.

1 19. The system of claim 13, wherein the system is further capable of monitoring and
2 controlling the production operation by:

3 providing at least one advance notice of when material will be exhausted for the at
4 least one production position;

5 tracking an inventory of the at least one electronic component using the printed
6 information;

7 controlling the inventory using the printed information; and

8 generating production records using the printed information.

1 20. The system of claim 13, wherein the printed information further comprises at least
2 one item selected from a group comprising part number, tolerance and value description,
3 batch number, lot number, component manufacturer, and component vendor, and wherein
4 the printing comprises at least one type selected from a group comprising alphanumeric
5 characters and Automatic Identification and Data Capture (AIDC) technologies, and
6 wherein the printing is produced using at least one method selected from a group
7 comprising printing, ink jet printing, laser etching, and imaging.

1 21. The system of claim 13, wherein the AIDC technologies comprise one-dimensional
2 barcodes, two-dimensional barcodes, three-dimensional barcodes, composite symbology,
3 and Reduced Space Symbology barcodes, wherein the electronic reading comprises
4 scanning and reading using at least one technology selected from a group comprising
5 Optical Character Recognition (OCR), Optical Mark Recognition (OMR), Magnetic Ink
6 Character Recognition (MICR), infrared scanning, and machine vision, wherein the
7 machine vision technology uses at least one vision subsystem selected from a group
8 comprising linear imagers, laser imagers, and charge coupled device (CCD) cameras.

1 22. The system of claim 13, wherein electronically reading printed information
2 comprises scanning and reading printed information on at least one cover tape of the at
3 least one component tape.

1 23. The system of claim 13, wherein electronically reading printed information
2 comprises scanning and reading printed information on at least one carrier tape of the at
3 least one component tape.

1 24. A computer readable medium containing executable instructions which, when
2 executed in a processing system, causes the system to control a production operation, the
3 controlling comprising:
4 electronically reading printed information from at least one component tape at
5 intervals along the at least one component tape, wherein the printed information includes a
6 count of at least one electronic component, the count indicating a position of the at least
7 one electronic component on the component tape; and
8 automatically controlling at least one production device using the printed
9 information.

1 25. The computer readable medium of claim 24, wherein the controlling further
2 comprises:

3 verifying components of at least one production position using the printed
4 information;

5 verifying equivalent components of the at least one production position using the
6 printed information;

7 verifying that at least one rule is satisfied using the printed information;

8 verifying a production set-up using the printed information; and
9 inhibiting production upon detection of an incorrect production set-up.

1 26. The computer readable medium of claim 24, wherein the controlling further
2 comprises:

3 providing at least one advance notice of when material will be exhausted for the at
4 least one production position;

5 tracking an inventory of the at least one electronic component using the printed
6 information;

7 controlling the inventory using the printed information; and

8 generating production records using the printed information.

1 27. The computer readable medium of claim 24, wherein the printed information
2 further comprises at least one item selected from a group comprising part number,
3 tolerance and value description, batch number, lot number, component manufacturer, and
4 component vendor, and wherein the printing comprises at least one type selected from a
5 group comprising alphanumeric characters and Automatic Identification and Data Capture
6 (AIDC) technologies, and wherein the printing is produced using at least one method
7 selected from a group comprising printing, ink jet printing, laser etching, and imaging.

1 28. The computer readable medium of claim 24, wherein the AIDC technologies
2 comprise one-dimensional barcodes, two-dimensional barcodes, three-dimensional
3 barcodes, composite symbology, and Reduced Space Symbology barcodes, wherein the
4 electronic reading comprises scanning and reading using at least one technology selected
5 from a group comprising Optical Character Recognition (OCR), Optical Mark Recognition
6 (OMR), Magnetic Ink Character Recognition (MICR), infrared scanning, and machine

7 vision, wherein the machine vision technology uses at least one vision subsystem selected
8 from a group comprising linear imagers, laser imagers, and charge coupled device (CCD)
9 cameras.

1 29. The computer readable medium of claim 24, wherein electronically reading printed
2 information comprises scanning and reading printed information on at least one cover tape
3 of the at least one component tape.

1 30. The computer readable medium of claim 24, wherein electronically reading printed
2 information comprises scanning and reading printed information on at least one carrier
3 tape of the at least one component tape.

1 31. An electromagnetic medium containing executable instructions which, when
2 executed in a processing system, causes the system to control a production operation, the
3 controlling comprising:

4 electronically reading printed information from at least one component tape at
5 intervals along the at least one component tape, wherein the printed information includes a
6 count of at least one electronic component, the count indicating a position of the at least
7 one electronic component on the component tape; and

8 automatically controlling at least one production device using the printed
9 information.

1 32. The electromagnetic medium of claim 31, wherein the controlling further
2 comprises:

3 verifying components of at least one production position using the printed
4 information;

5 verifying equivalent components of the at least one production position using the
6 printed information;

7 verifying that at least one rule is satisfied using the printed information;

8 verifying a production set-up using the printed information; and

9 inhibiting production upon detection of an incorrect production set-up.

1 33. The electromagnetic medium of claim 31, wherein the controlling further
2 comprises:

3 providing at least one advance notice of when material will be exhausted for the at
4 least one production position;

5 tracking an inventory of the at least one electronic component using the printed
6 information;

7 controlling the inventory using the printed information; and

8 generating production records using the printed information.

1 34. The electromagnetic medium of claim 31, wherein the printed information further
2 comprises at least one item selected from a group comprising part number, tolerance and
3 value description, batch number, lot number, component manufacturer, and component
4 vendor, and wherein the printing comprises at least one type selected from a group
5 comprising alphanumeric characters and Automatic Identification and Data Capture
6 (AIDC) technologies, and wherein the printing is produced using at least one method
7 selected from a group comprising printing, ink jet printing, laser etching, and imaging.

1 35. The electromagnetic medium of claim 31, wherein the AIDC technologies
2 comprise one-dimensional barcodes, two-dimensional barcodes, three-dimensional

3 barcodes, composite symbology, and Reduced Space Symbology barcodes, wherein the
4 electronic reading comprises scanning and reading using at least one technology selected
5 from a group comprising Optical Character Recognition (OCR), Optical Mark Recognition
6 (OMR), Magnetic Ink Character Recognition (MICR), infrared scanning, and machine
7 vision, wherein the machine vision technology uses at least one vision subsystem selected
8 from a group comprising linear imagers, laser imagers, and charge coupled device (CCD)
9 cameras.

1 36. The electromagnetic medium of claim 31, wherein electronically reading printed
2 information comprises scanning and reading printed information on at least one cover tape
3 of the at least one component tape.

1 37. The electromagnetic medium of claim 31, wherein electronically reading printed
2 information comprises scanning and reading printed information on at least one carrier
3 tape of the at least one component tape.